

WHAT IS CLAIMED IS

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1. A magnetic recording and/or reproducing apparatus comprising:
  - equalization means for equalizing a signal sequence which is reproduced from a magnetic recording medium and outputting an equalized waveform; and
    - conversion means for converting the equalized waveform into a maximum likelihood sequence by carrying out metric calculation based on average values of the equalized waveform.

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2. The magnetic recording and/or reproducing apparatus as claimed in claim 1, further comprising:

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error detection and correction means for carrying out an error detection and an error correction with respect to the maximum likelihood sequence using a parity bit,

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said error detection and correction means carrying out the error correction by comparing a sequence which is obtained by convolution of the maximum likelihood sequence and the average values of the equalized waveform, with the equalized waveform.

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3. The magnetic recording and/or

reproducing apparatus as claimed in claim 1, further comprising:

memory means for storing a conversion table which includes the average values of the equalized waveform.

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10 4. The magnetic recording and/or reproducing apparatus as claimed in claim 3, further comprising:

control means for updating said conversion table at an arbitrary timing.

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20 5. A magnetic recording and/or reproducing apparatus comprising:

a look-up table which stores compensation amounts based on errors between ideal values and average values of a reproduced waveform of a signal sequence reproduced from a magnetic recording medium  
25 or average values of an equalized waveform which is obtained by equalization of the reproduced waveform; and

30 a compensation circuit which carries out a recording compensation with respect to a non-linear distortion based on said look-up table when recording the signal sequence on the magnetic recording medium.

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6. The magnetic recording and/or

reproducing apparatus as claimed in claim 5, wherein said look-up table includes polarity information of magnetic transition.

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7. The magnetic recording and/or  
reproducing apparatus as claimed in claim 5, wherein  
10 the compensation amounts reflect effects of the  
magnetic transition of three or more preceding bits.

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8. The magnetic recording and/or  
reproducing apparatus as claimed in claim 5, further  
comprising:  
control means for updating said look-up table  
20 at an arbitrary timing.

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9. A magnetic recording and/or  
reproducing apparatus comprising:  
reproducing means for reproducing a signal  
sequence from a magnetic recording medium and  
outputting a reproduced waveform;  
30 equalization means for equalizing the  
reproduced waveform and outputting an equalized  
waveform;  
a look-up table which stores compensation  
amounts based on errors between ideal values and  
35 average values of the reproduced waveform or average  
values of the equalized waveform; and  
a compensation circuit which carries out a

recording compensation with respect to a non-linear distortion based on said look-up table when recording the signal sequence on the magnetic recording medium.

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10. The magnetic recording and/or  
10 reproducing apparatus as claimed in claim 9, further comprising:

memory means for storing said look-up table, and a conversion table which includes the average values of the equalized waveform.

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11. The magnetic recording and/or  
20 reproducing apparatus as claimed in claim 10, further comprising:

control means for updating said conversion table and/or said look-up table at an arbitrary timing.

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12. A magnetic recording and/or  
30 reproducing apparatus comprising:

an equalization section which carries out an equalization with respect to a signal sequence reproduced from a magnetic recording medium, and outputs an equalized waveform; and

35 a conversion section which converts the equalized waveform into a maximum likelihood sequence by carrying out metric calculation based on

average values of the equalized waveform.

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13. A magnetic recording and/or  
reproducing apparatus comprising:

a reproducing section which reproduces a signal  
sequence from a magnetic recording medium and  
10 outputs a reproduced waveform;

an equalization section which carries out an  
equalization on the reproduced waveform and outputs  
an equalized waveform;

15 a look-up table which stores compensation  
amounts based on errors between ideal values and  
average values of the reproduced waveform or average  
values of the equalized waveform; and

20 a compensation circuit which carries out a  
recording compensation with respect to a non-linear  
distortion based on said look-up table when  
recording the signal sequence on the magnetic  
recording medium.

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